In the Specification:

Please amend the Specification as indicated below.

Please replace the paragraph beginning at line 10 of page 10 with the following amended paragraph:

The application server 20 communicates the enterprise network service request to the Network Service Modules NSM-1 22, NSM-2 24, and NSM-3 26. As shown in Fig. 1, each of the forwarding domains 12, 14 and 16 is associated with a corresponding NSM. NSM-1 22 is associated with the forwarding domain ~~1~~ 12, NSM-2 24 is associated with forwarding domain ~~2~~ 14, and NSM-3 26 is associated with forwarding domain ~~3~~ 12.

Please replace the paragraph beginning at line 17 of page 10 with the following amended paragraph:

The application server 20 may be designed to execute on any specific type of computer system having one or more processors, input/output devices, and program storage, and may be designed to execute with any appropriate software operating system. For example, the application server 20 may be designed to execute on a hardware computer system with a modified version of the Windows NT™ operating system, provided by Microsoft Corporation. Such a modified version of the Windows NT operating system implements a communications protocol enabling information describing enterprise network service requests issued by the application server 20 to be passed to one or more NSMs, such as NSM-1 22. This protocol is referred to herein for purposes of explanation as the Network Services Protocol(NSP). Using

such a modified operating system, the application server 20 makes an operating system call requesting 10Mbs guaranteed service for the virtual connection between the application server 20 and the application client 18. The computer system 21 may be provisioned *a priori* with the IP address of NSM-1 22. The modified Windows NT operating system communicates to NSM-1 22, using NSP, requesting the 10Mbs guaranteed service. The NSP request message sent to NSM-1 22 includes the requested amount of guaranteed bandwidth, along with identification of the virtual connection between the application server 20 and the application client 18. Such virtual connection identification may include source and destination IP addresses and TCP ports. Alternatively, if the operating system itself is not modified to implement NSP, the application server 20 itself can be designed to implement NSP communications with one or more of the NSMs.

Please replace the paragraph beginning at line 13 of page 11 with the following amended paragraph:

As shown in Fig. 1, forwarding domain ~~3~~ 16 includes a switched network 39 including some number of switching packet forwarding devices, forwarding domain ~~2~~ 14 includes a routed network 41 including some number of routing packet forwarding devices, and forwarding domain 12 includes an MPLS-based network 47. The switched network 39 has a physical connection 52 with switch router 34, and to a computer system 25 on which NSM-3 26 executes. NSM-3 26 has a logical connection to NSM-2 24, and the computer system 23 on which NSM-2 24 executes has a physical connection 40 into the routed network 41. The router 43 has a physical connection 46 into the MPLS network 47. NSM-2 24 has a logical connection 44 to NSM-1 22. The computer system 27 on which NSM-1 22 executes has a physical connection 48 into the MPLS-based network 47, and NSM-1 22 has a logical connection 50 to the application server 20. The application server computer system 21 has a physical connection to the label edge router 49.

Please replace the paragraph beginning at line 22 of page 12 with the following amended paragraph:

In response to the network service request by the application server 20, NSM-1 22 determines a potential flow path that meets the requested service requirement (i.e. 10Mbps) within forwarding domain ~~1~~ 12. NSM-1 22 then determines a next adjacent forwarding domain for packets passed between the application server 20 and the application client 18. In this case, the adjacent forwarding domain is forwarding domain ~~2~~ 14. Using a table of forwarding domain adjacencies, NSM-1 22 makes a determination of a next adjacent forwarding domain, and further determines the associated NSM for that adjacent forwarding domain, in this case NSM-2 24. Using NSEP, NSM-1 22 requests NSM-2 24 provide the requested network service with respect to forwarding domain ~~2~~ 14.

Please replace the paragraph beginning at line 3 of page 13 with the following amended paragraph:

In response to the request from NSM-1 22, NSM-2 24 determines a potential flow path meeting the requested service requirement within forwarding domain ~~2~~ 14. Using its forwarding domain adjacency table, NSM-2 24 finds a next adjacent forwarding domain for packets passed between application server 20 and application client 18. In the example of Fig. 1, the next adjacent forwarding domain is forwarding domain ~~3~~ 16. NSM-2 24 also uses its table of forwarding domain adjacencies to determine that forwarding domain 3 16 is controlled by NSM-3 26. Using NSEP, NSM-2 24 requests NSM-3 26 provide the requested network service in forwarding domain ~~3~~ 16.

Please replace the paragraph beginning at line 13 of page 13 with the following amended paragraph:

In response to the request from NSM-2 24, NSM-3 26 determines a potential flow path that meets the requested service requirement within forwarding domain ~~3~~ 16. NSM-3 26 determines that the end device 19 is within forwarding domain ~~3~~ 16. NSM-3 26 informs NSM-2 24 of the probable success of providing the requested service within forwarding domain ~~3~~ 16. Each NSM determines the probability of success of providing the requested service within its associated forwarding domain based on the current availability of resources. For example, NSM-2 24 determines the probability of successfully providing the requested service with regard to forwarding domain 14, NSM-1 determines the probability of success of providing the requested service within forwarding domain ~~1~~ 12, etc. If any NSM determines that the requested service cannot be, or is not likely to be provided across its associated forwarding domain, it passes this information to the previous adjacent forwarding domain NSM, which passes the information in turn to the previous adjacent forwarding domain, and so on, until the service request is eventually denied to the original service requester (i.e. application server 20). Similarly, if any NSM fails to actually setup the necessary path within its associated forwarding domain, that failure is also reported to the NSM from which the service request was received by that NSM, and passed back to inform the original service requester of the failure.

Please replace the paragraph beginning at line 5 of page 14 with the following amended paragraph:

In the illustrative embodiment of Fig. 1, NSM-1 22 receives an affirmative probability of success from NSM-2 24, which received an affirmative probability of success from NSM-3 26. NSM-1 22 then informs NSM-2 24 to setup the flow path within forwarding domain ~~2~~ 14, and NSM-2 24 in turn will inform NSM-3 26 to setup the flow path within forwarding domain ~~3~~ 16.

Please replace the paragraph beginning at line 11 of page 14 with the following amended paragraph:

Next, the NSM modules establish the flow paths within the forwarding domains, and connect them together to form the end to end communication path for the virtual connection between the application server 20 and the application client 18. NSM-1 22 creates a label path, using NSEP, beginning at LER 49, which is connected to the application server computer system 21, across the MPLS-based network 47, and to the edge of the routed network 41 in the adjacent forwarding domain ~~2~~ 14. In doing so, NSM-1 22 causes a label to be recognized by networking devices within the MPLS-based network 47, for the data packet flow within forwarding domain ~~1~~ 12. The label is associated with 10Mbs guaranteed service in each networking device that the data flow passes through. LER 49, physically connected to the application server system 20, is referred to as a "path classifier" system, because it identifies and labels received packets from the application server 20 that are subject to the previously defined enterprise network service requirements. As a path classifier, LER 49 recognizes, based on information provided by NSM-1 22, source and destination IP address and TCP port values in the packet headers of packets received from the application server 20, that are sent to the application client 18, and which therefore are subject to the end to end service requirements.

Please replace the paragraph beginning at line 3 of page 15 with the following amended paragraph:

A networking device within the MPLS-based network 47 that handles packets to and from the adjacent forwarding domain ~~2~~ 14, is designated by NSM-1 22 as the label termination path device. This device operates with respect to the MPLS-based network 47 to write the appropriate destination IP address and DiffServ bits into packets being forwarded from the

MPLS-based network 47 to the forwarding domain ~~2~~ 14. In this way, such packets contain the appropriate header information when they are passed to the router 43 in the routed network 41 of forwarding domain ~~2~~ 14. The values of the destination IP address and DiffServ bits to be written into such packets are communicated by NSM-2 24 to NSM-1 22 during flow setup.

Please replace the paragraph beginning at line 14 of page 15 with the following amended paragraph:

Using NSEP, NSM-2 24 passes forwarding information to each networking device of routed network 41 through which the data flow between application server 20 and application client 18 passes. The forwarding information includes the destination IP address and DiffServ bit values written into packets from the application client 20 by the label termination path device in the MPLS-based network 41. The forwarding information defines the path in the routed network 41 providing the requested service (i.e. guaranteed 10Mbs service). At a networking device interfacing the routed network 41 and the switched network 39, for example the switch router 34, NSM-2 24 establishes forwarding information at the end of the routed path, causing the switch router 34 to write a predetermined VLAN-tag (Virtual Local Area Network-tag), or stacked VLAN-tag), and priority bits, into the headers of packets communicated between the application server 20 and the application client 18, that are passed from forwarding domain ~~2~~ 14 to forwarding domain ~~3~~ 16. The VLAN tag value to be used is communicated by NSM-3 26 to NSM-2 24 during flow setup. In the example of Fig. 1, since the application client 18 is within forwarding domain ~~3~~ 16, the device (i.e. switch router 34) passing packets from forwarding domain ~~2~~ 14 into forwarding domain ~~3~~ 16 also writes the destination IP address and port number associated with the application client 18 on the wireless laptop 19 into such packets.

Please replace the paragraph beginning at line 6 of page 16 with the following amended paragraph:

NSM-3 26 establishes forwarding information in each networking device in forwarding domain ~~3~~ 16, using NSEP, through which the data flow passes, using the predetermined VLAN tag (or stacked VLAN tag) and priority bits as the key. The flow provides the characteristic of 10Mbs guaranteed service to the application end point (application client 18). In this way, the disclosed system sets up an end to end path from application server 20 to application client 18 with a 10Mbs guaranteed service.

Please replace the paragraph beginning at line 4 of page 17 with the following amended paragraph:

Fig. 2 is a flow chart showing steps performed in an illustrative embodiment of the disclosed system during operation, following establishment of an end to end communication path as described above. Networking devices in the enterprise network forward packets and enforce service parameters agreed to for the end to end connection. For example, at step 100, the application client 18 forms and transmits a packet having source IP address 'x', destination IP address 'y', TCP source port 'a', and TCP destination port 'b'. The packet is received by path classifier system 30, which maps the values 'x', 'y', 'a' and 'b' to VLAN tag 'v1', which is written into the packet header. Switch 30 then forwards the packet to other switch devices in forwarding domain ~~3~~ 16, which may operate to change 'v1' to another VLAN tag value 'v2', or leave 'v1' unchanged. At the edge of the switch based network 39 in forwarding domain ~~3~~ 16, at step 114, the VLAN tag in the packet header (either 'v1' or 'v2') is mapped to a destination IP address 'z' and DiffServ byte value 'd1', which are written into the packet header. The packet is then forwarded to the routed network 41, in which it is routed at step 116 by a first router based on the values 'z' and 'd1'. At a subsequent router, for example the router 43, the values 'z' and 'd1' are mapped to IP address 'y', which is written into the packet. The packet is then forwarded to an LER device at the edge of the MPLS-based network 47 in forwarding domain ~~1~~ 12, in which the values 'y' and 'd1' are mapped at step 120 to an MPLS label L1, which is written into the packet header. The packet is then routed at step 122 within the MPLS-based network 47, within which label L1 may or may not be changed to L2. At step 124, an LER device, such as

LER 49, operates to terminate the L1 or L2 label, and forwards the packet to the device 21 on which the application server 20 is executing. The application server 20 then receives the packet. As shown at step 126, the application server 20 may operate to reply to the received packet from the application client by generating a reply packet having source IP address ‘y’, destination IP address ‘x’, TCP source port ‘b’, and TCP destination port ‘a’.